

## Flip chip components

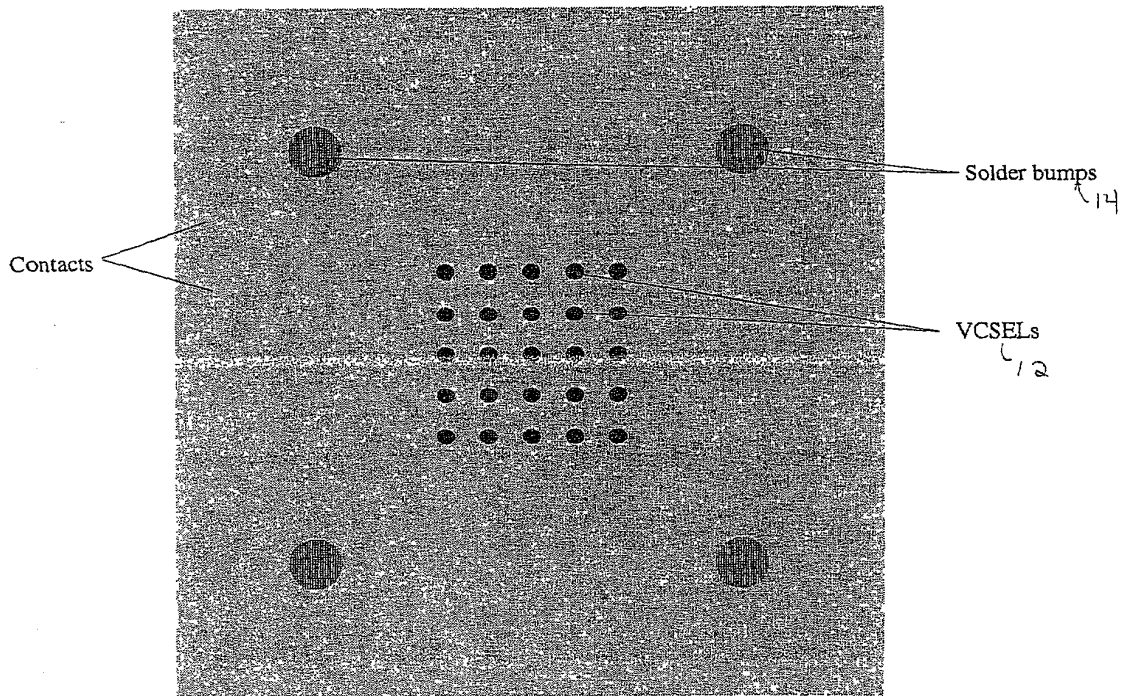


Figure 1A

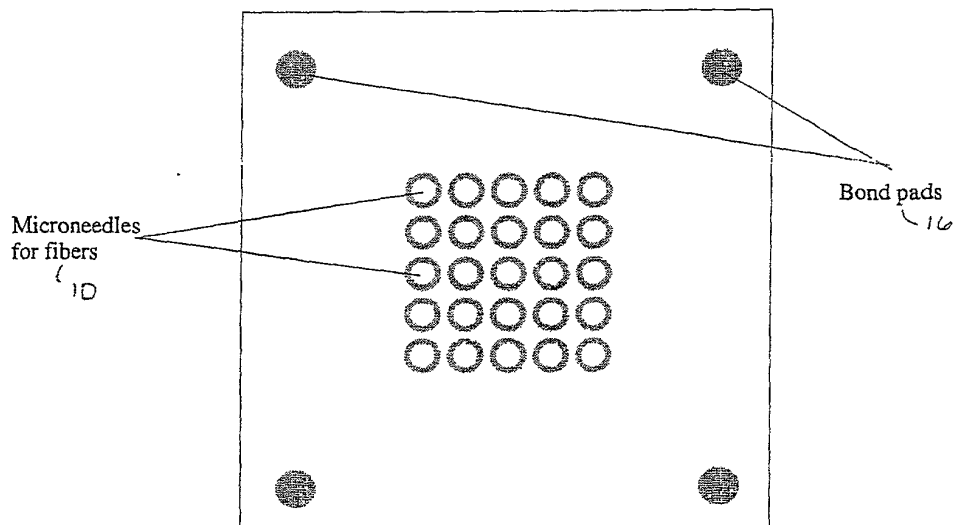


Figure 1B

## Flip Chip Assembly Drawing

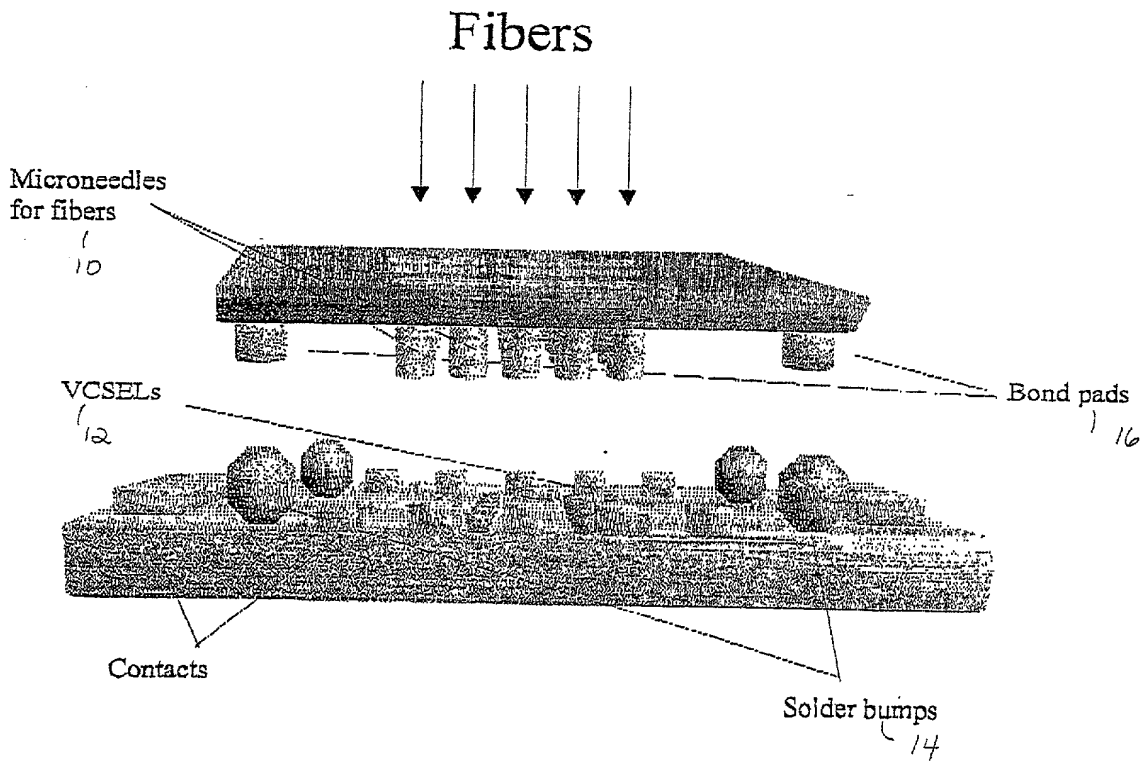


Figure 20

### Metal Microneedle Fabrication Process

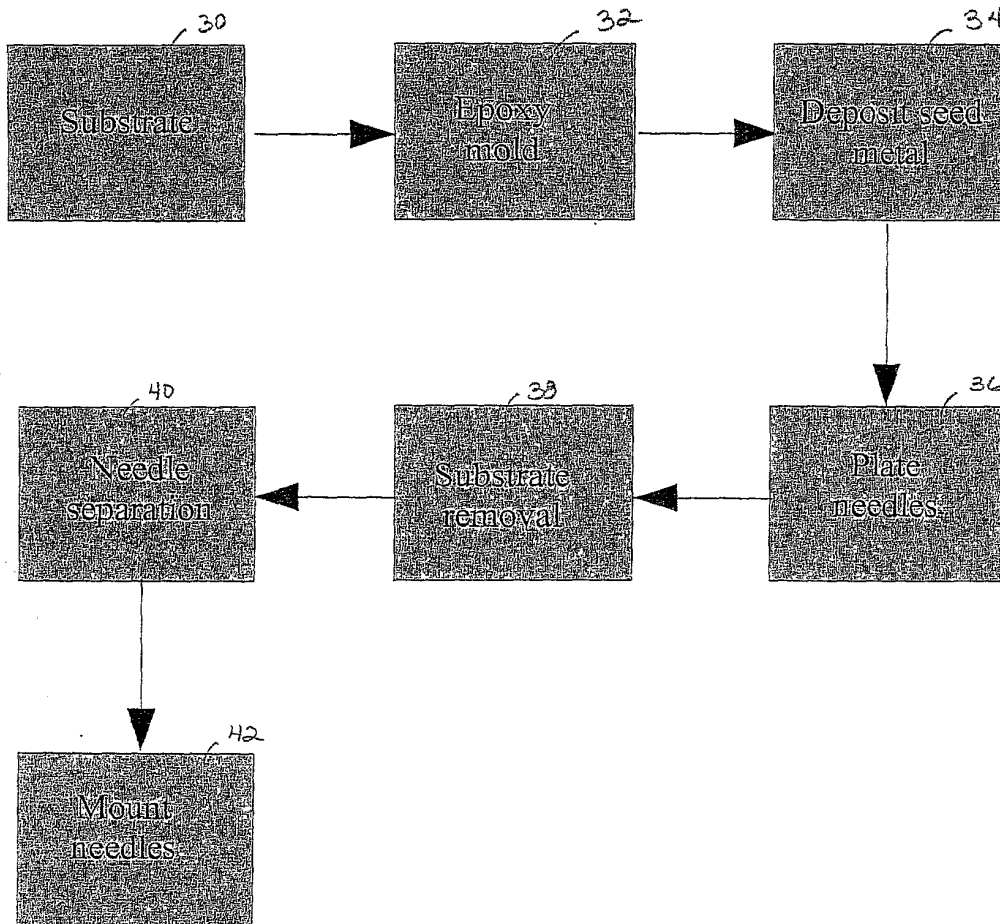


Figure 3A

Fiber/VCSEL Assembly Process

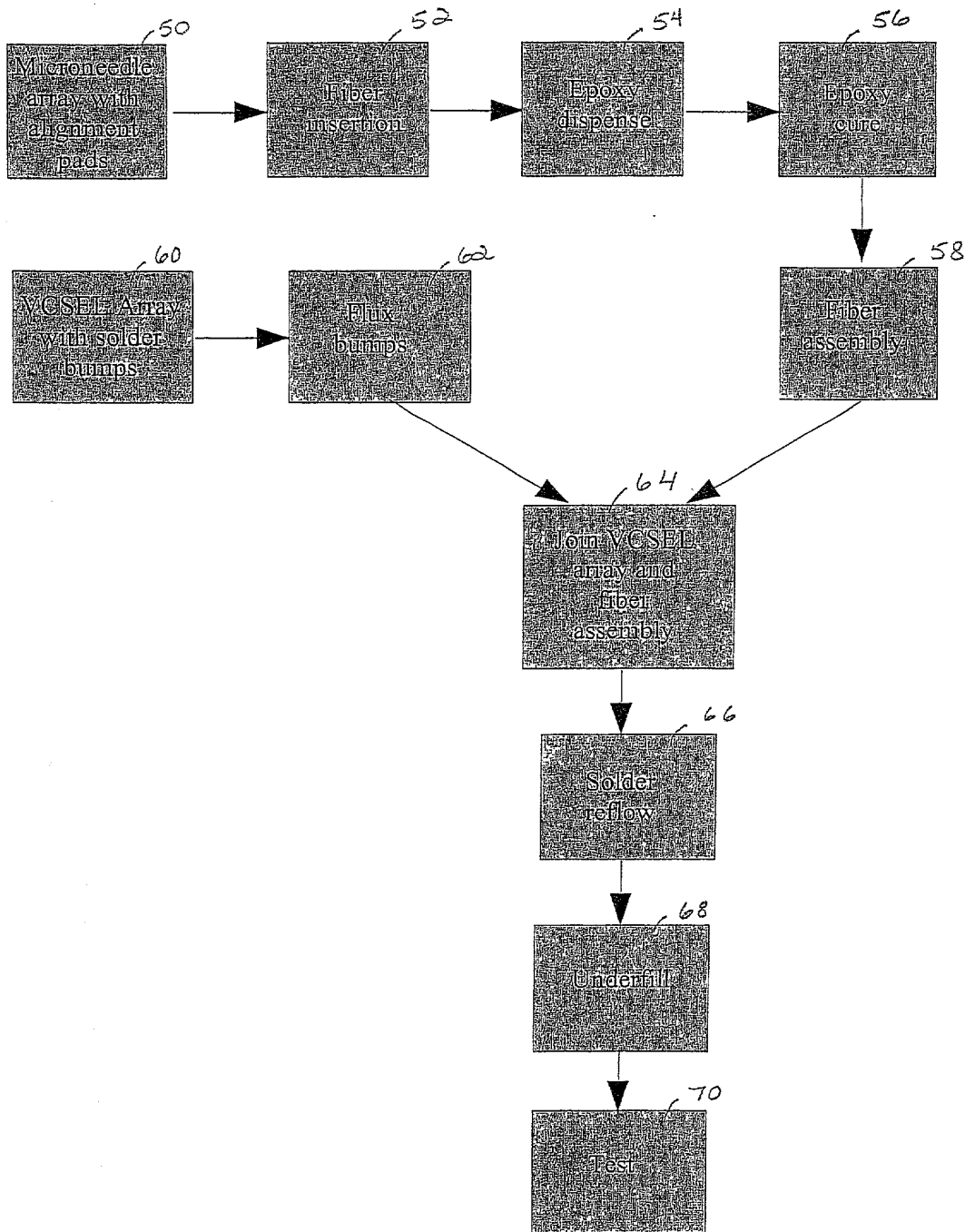


Figure 3B

## Fiber Assembly Cross-Sections

Fiber in Needles

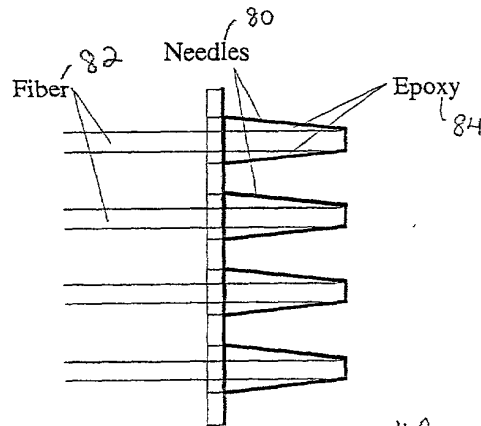


Figure 4A

Fiber w/ Epoxy Plug

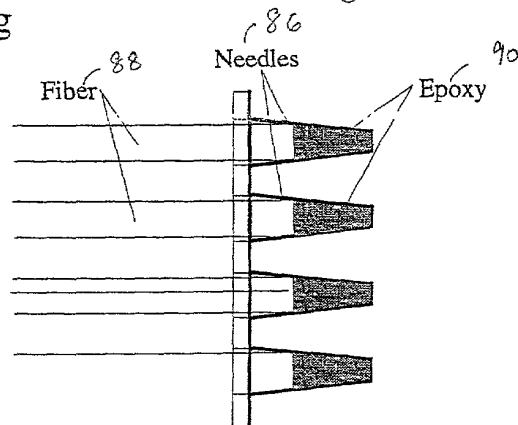


Figure 4B

Fiber w/ epoxy lens

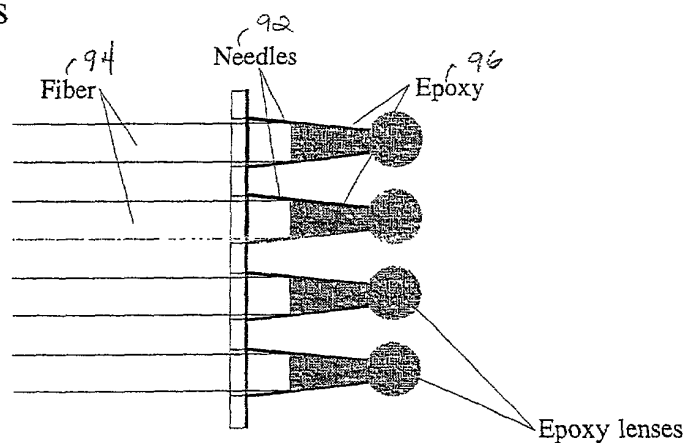


Figure 4C

### Fiber w/ graded epoxy lens

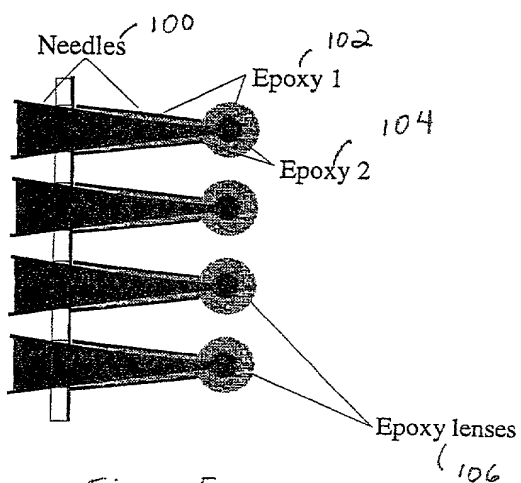


Figure 5

### Micro-extrusion

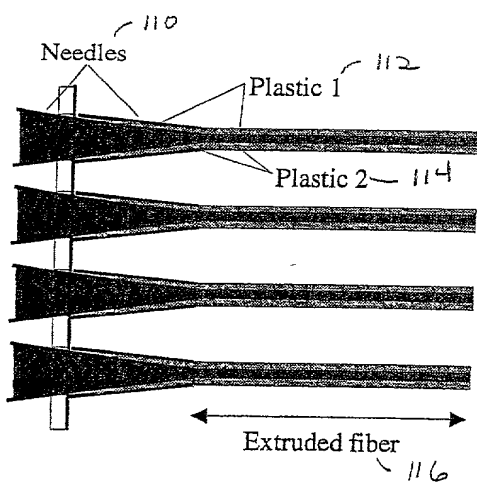


Figure 6

## Connector-Fiber to Laser

Before insertion

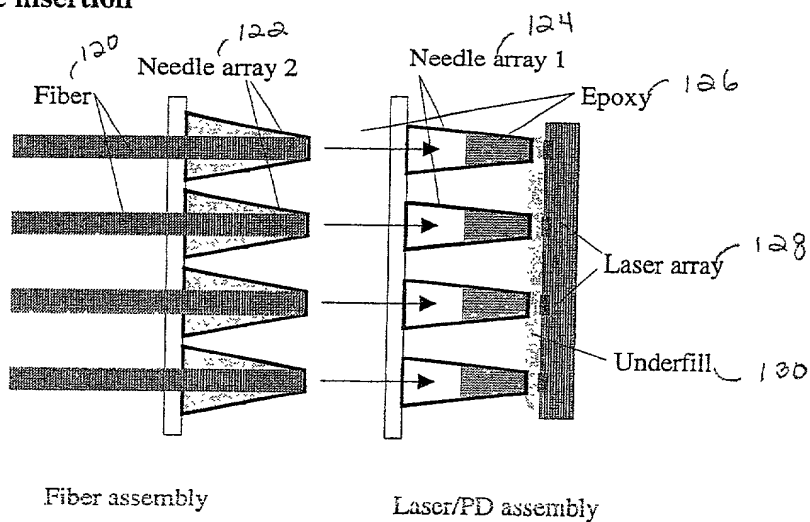


Figure 7A

After insertion

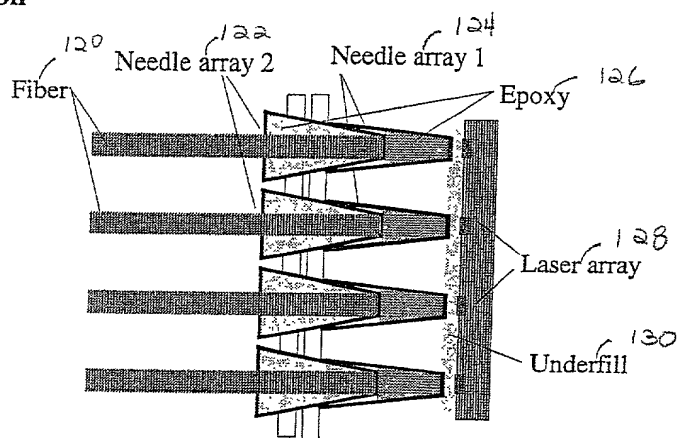


Figure 7B

## Lensed Fiber Connector

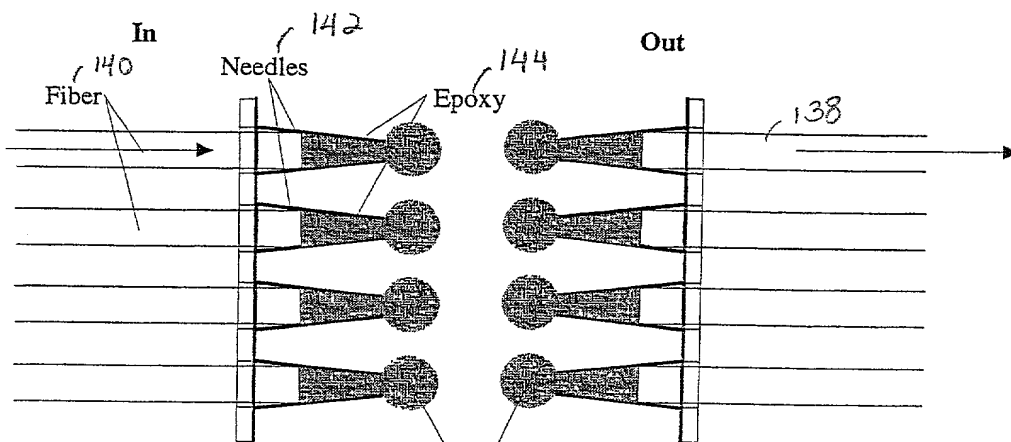


Figure 8

## Un-lensed Fiber Connector

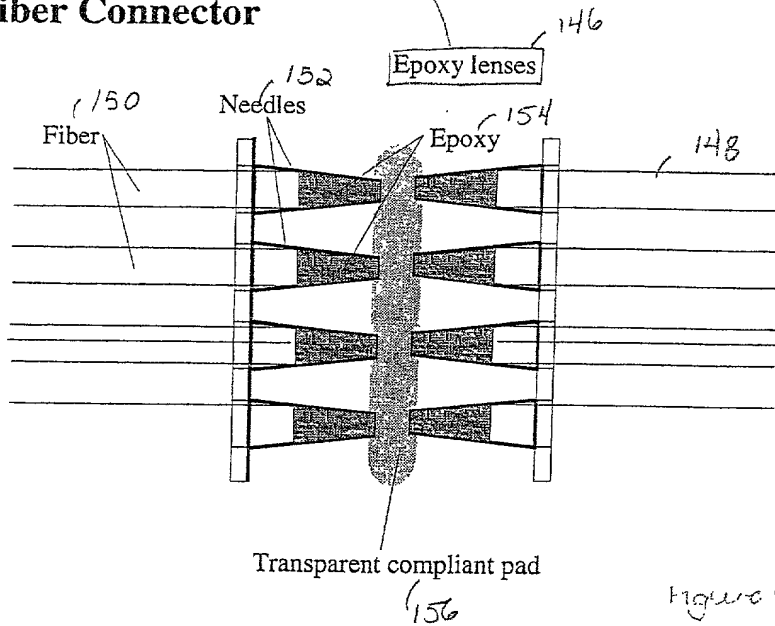


Figure 9



## Lensed Fiber Connector w/ Alignment Spacer

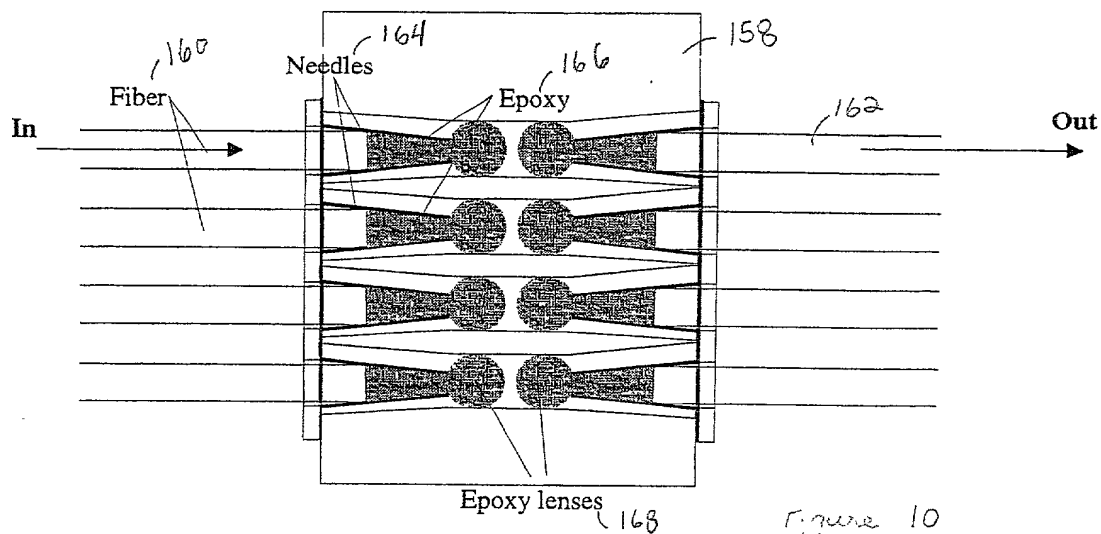


Figure 10

## Un-lensed Fiber Connector w/ Alignment Spacer

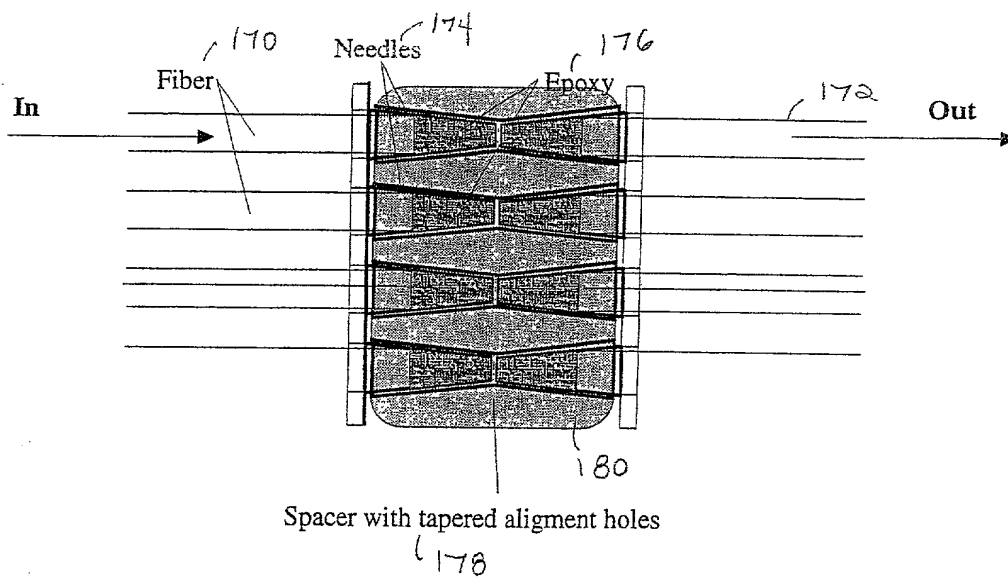


Figure 11

### Fiber w/ Sensor Plug

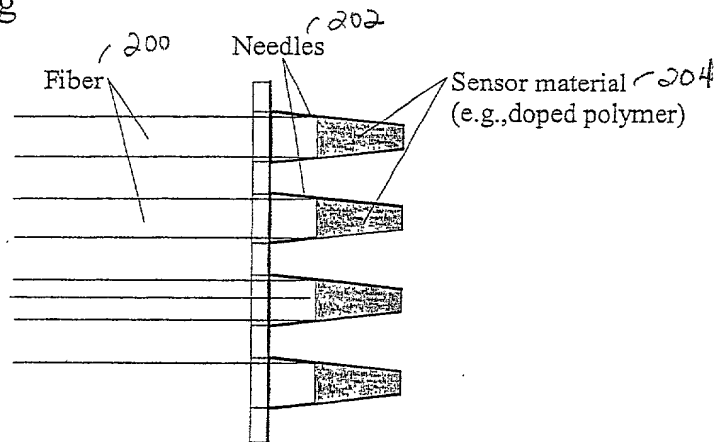


Figure 12A

### Fiber w/ lens-shaped sensor element

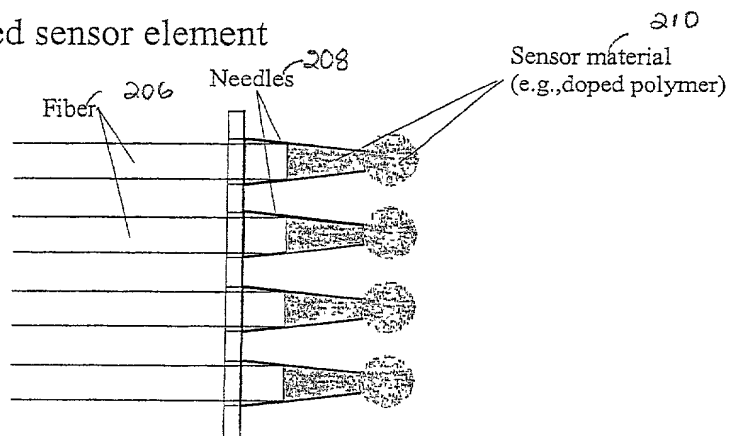


Figure 12B

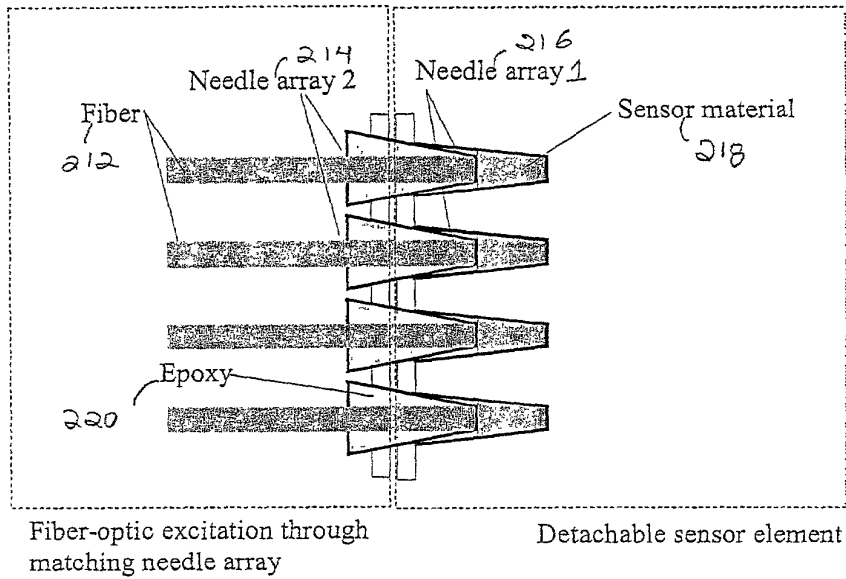


Figure 12C